LIT SERVICE & WIRING SHEET
W10670787 C

SERVICE SHEET

W10670778 A

⚠ WARNING

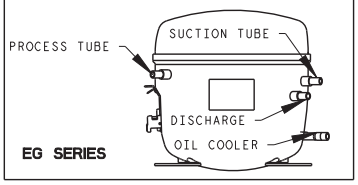
Electrical Shock Hazard
Disconnect power before servicing.
Replace all parts and panels before operating.
Failure to do so can result in death or electrical shock.

* Normal operating conditions are viewed when the air and temperature controls are at mid-sitting, freezer section 0 to -5°F and unit is cycling.

NOTE: Watt and pressure readings will vary and are influnced by the existing condition of the appliance, such as iced-up evaporator, condition of condenser, defrost cycle, pull-down time and customer use.

PERFORMANCE DATA *(NORMAL OPERATING CONDITIONS)			
AMB	WATTS	SYSTEM PRESSURE (PSIG) HIGH SIDE	LOW SIDE
70°	140±20	95 ± 20	-7 TO 3
90°	150±20	135 ± 20	-4 TO 3
110°	170±20	185 ± 20	-2 TO 4

(OIL COOLER IS OPTIONAL)
EMBRACO



SERVICE INFORMATION (W10281960 C)

1. COMPRESSOR SUCTION AND PROCESS STUBS MAY NOT BE INTERCHANGED UNLESS INDICATED BY **.
2. REFRIGERANT CHARGE MUST BE APPLIED TO HIGH SIDE ONLY.
3. ICE MAKER AND WATER VALVE NOT ORIGINAL EQUIPTMENT ON ALL MODELS.
4. NOTE: ICE MAKER CYCLE MUST BE INITIATED ELECTRICALLY. DO NOT TRY TO MANUALLY START CYCLE.
5. SERVICE DEFROST BI-METALS 50°F OPEN.
6. PART NUMBER CAN BE FOUND ON THE COMPONENT.

SERVICEABLE ELECTRICAL PARTS MATRIX (COMPONENTS BY CUBIC FOOT SIZE)

SERVICEABLE PARTS	30 CUBIC FOOT	25, 26 AND 27 CUBIC FT		WATTAGE	RESISTANCE
	120V				
COMPRESSOR	EGX80	EGYS70	EGX70		
	W10120457	W10260368	W10200250		
RUN WINDINGS	*				1-5
START WINDINGS	*				3-11
START DEVICE, OVERLOAD	See Note 6				
RUN CAPACITOR (IF EQUIPPED)	See Note 6				
THERMISTOR	W10309233				2.7K@77°F, 7.964K@36°F, 23.345K@0°F
MAIN CONTROL (Unit copartment)	See Note 6				
USER INTERFACE	See Note 6				
BAFFLE MODULE (OPT)	W10251495 / W10268666				
DEFROST TIMER (OPT)	See Note 6				
ADAPTIVE DEFROST ** (OPT)	See Note 6				
ADC/FILTER INDICATOR (OPT)	See Note 6				
DEFROST HEATER	See Note 6			435-465	28-34
DEFROST BI-METAL	See Note 6				
EVAPORATOR FAN	See Note 6			2-9	
CONDENSER FAN	See Note 6			3-12	

** PRIMARY SOURCE PART NUMBER

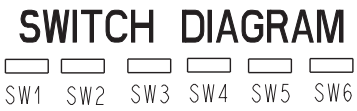
ELECTRONIC CONTROL FEATURES

The dispenser user interface in this appliance controls both the product cooling and the dispensing systems. The product cooling diagnostics are first (see this page) followed by the dispensing diagnostics (see back of this page). The cooling portion of the electronic control in this appliance controls the temperatures in the refrigerator and freezer compartments independently, delays the operation of the evaporator fan, and pulses the defrost heater. The fan delay and pulsed defrost features are controlled in the following manner:

1. Evaporator Fan Delay - The electronic control delays the evaporator fan from coming on for 60 seconds after the compressor has turned on, and the evaporator fan stays on for 90 seconds after the compressor has turned off.
2. Pulsed Defrost Heat - During the defrost cycle the heater is energized continuously for the first 5 minutes. It is then cycled off for 60 seconds and on for 120 seconds. This on/off cycle is repeated until the bi-metal opens or the maximum defrost time (21 minutes) is reached.

SERVICE DIANOSTICS MODE

To **ENTER SERVICE DIAGNOSTICS Mode:** Press SW1 and SW2 simultaneously for 3 seconds. Release both buttons when you hear the CHIME indicator.
Unit must not be in Lockout prior to entering SERVICE DIAGNOSTIC MODE.
The display will show 01 to indicate the control is in step 1 of the diagnostics routine.
To **EXIT SERVICE DIAGNOSTICS Mode**, do one of the following 3 options:
1)Press SW1 and SW2 simultaneously for 3 seconds.
2) Disconnect the product from power.
3) Allow 20 minutes to pass.
Following the exit of the diagnostic mode, the controls will then resume normal operation.



Cooling diagnostics are steps 1 through 7. Dispensing diagnostics are steps 8 through 30.
Each step must be manually advanced. Press SW5 to move to the next step in the sequence. Press SW4 to back up in the sequence to the previous step.Diagnostics will begin at Step 1.Each step is displayed in the two digits of the dispenser user interface display. The step results are displayed in the two digits on dispenser user interface display 2 seconds after the step number is displayed.An amber LED will be shown to designate that the step number is being displayed and a red LED will be shown to designate that the status of the step is being displayed.
All button and pad inputs shall be ignored and all inputs shall be off, except as described in the actions for each step.
Note: The ice door motor cycles 1 minute after an ice dispensing.

Service Tip: If the control does not respond, remove power from the entire appliance for 10 seconds. Re-apply power, wait 10 seconds, and perform the service diagnostics routine.

Step No.	Component Tested	Suggested Diagnostics Routine: COOLING system steps 1-7. DISPENSING system steps 8-30.	Component Status Indicator
1	FC thermistor	This is an internal board test. The board will check the resistance value of the thermistor and display the results on the RC Temp Display.	01=Pass 02=Open 03=Short
2	RC thermistor	This is an internal board test. The board will check the resistance value of the thermistor and display the results on the RC Temp Display.	
3	Evaporator fan motor and Air baffle motor	Verify air flow from the evaporator fan. Check to see if the baffle opens and closes.	01=Fan ON, Air Baffle is open 02=Fan ON, Air Baffle is closed (not available on motors without feedback)
4	Compressor/Condenser Fan Motor	Line voltage switched to components from board. Verify 120VAC between line and neutral at motor.	01=ON 02=OFF
5	N/A	N/A (This step bypassed automatically)	N/A
6	Defrost heater/Bi-metal	Line voltage switched to components from board, verify 120VAC between line and neutral at heater. Under some conditions, the Bi-metal can take a few minutes to close the circuit. Note: If Bi-metal is open, it will need to be by-passed for heater to operate. See Note below.	Blank Untill get a valid reading 01 = Bimetal Closed 02 = Bimetal Open
7	Defrost Mode	The Defrost Mode can be set by using SW3. In ADC Mode the product will automatically defrost after a minimum of 8 hours of compressor runtime and up to maximum of 96 hours of compressor runtime, depending upon product usage. In Basic Mode the product will automatically defrost after 8 hours of compressor runtime. The Defrost Mode must be set to ADC ON before exiting the Service Diagnostic Mode. Press SW5 to indicate the completion of this step and to continue with dispenser service routine.	01 = ADC ON 02 = Basic Mode ON (8 hour timer)

ATTENTION: IF BI-METAL IS BY-PASSED FOR TESTING (IF APPLICABLE), DO NOT OVERHEAT EVAPORATOR AREA.

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DISPENSER USER INTERFACE DISPLAY DIGITS

Digit 1 Digit 2

Amber LED-Order filter
Red LED-Replace filter

NOTE:The step number is shown first,followed by the status of the step 2 seconds after the step number is displayed.When the step number is being shown,the amber LED will be on.When the status of the step is being shown,the red LED will be on.

SERVICE INFORMATION (W10649499 A)

SWITCH DIAGRAM

Step #	Component Tested	Suggested Diagnostics Routine: COOLING system steps 1-7. DISPENSING system steps 8-30.	Component Status Indicator
8	All UI indicators	Verify that all LED indicators and UI display digits turn on automatically.	All indicators ON
9	UI Button and Pad Test	Displays the User Interface Buttons and Ice and Water Pads status as described in the Component Status Indicator column. NOTE: Do not use SW4 and SW5 as these are used only to navigate through the Service Diagnostics.	Digit 1 Digit 2 1 0 = SW1 Pressed 2 0 = SW2 Pressed 3 0 = SW3 Pressed 6 0 = SW6 Pressed 0 1 = Ice Pad Pressed 0 2 = Water Pad Pressed 0 3 = Ice and Water Pads Pressed NOTE: SW4 and SW5 ARE USED FOR NAVIGATION AND ARE NOT DISPLAYED.
10	N/A	N/A (This step is bypassed automatically)	N/A
11	Dispenser Lighting	Pressing SW3 will change the dispenser lighting setting from OFF(0%) to ON(100%) To DIM(50%)	Blank
12	N/A	N/A (This step is bypassed automatically)	N/A
13	Dispenser Housing Heater Status	Displays the Dispenser Housing Heater status on the UI display. Press SW3 to change status.	01 = ON 02 = OFF
14	N/A	N/A (This step is bypassed automatically)	N/A
15	N/A	N/A (This step is bypassed automatically)	N/A
16	RC Door Switch Input	Displays the RC Door status in realtime on the UI display. Verify that the open and close status display correctly	01 = RC Door Open 02 = RC Door Closed
17	FC Door Switch Input	Displays the FC Door status in realtime on the UI display. Verify that the open and close status display correctly.	01 = FC Door Open 02 = FC Door Closed
18	Ice Door Motor	Displays the Ice Door stepper motor state on the UI display.Initiate ice dispence and verify that the mechanical operation of the ice door coorresponds to the component status indicator.NOTE:Ice door will have a delay in closing after an ice dispence is initiated.	01=Closed,02=Opening,03=Open,04=Closing
19	Fill tube heater status	If this feature is available on the product,this step will allow the fill tube heater to be toggled on and off throught the use of SW3.	01=ON,02=OFF
20	Water Filter Usage Rating	Displays in two sequential flashes the total water usage rating in gallons for the water filter on the UI display. Wait until dash is displayed which means end of the number.	00/0- to 99/9-
21	Water Filter Time Rating	Displays in two sequential flashes the total time rating in days for the water filter on the UI display. Wait until dash is displayed which means end of the number.	00/0- to 99/9-
22	Water Filter Usage	Displays in two sequential flashes the current water filter status in gallons used since last reset on the UI display. Wait until dash is displayed which means end of the number.	00/0- to 99/9-
23	Water Filter Time	Displays in two sequential flashes the current water filter status in days since last reset on the UI display. Wait until dash is displayed which means end of the number.	00/0- to 99/9-
24	Water Filter Reset	Display in two sequential flashes the current times the Water Filter was reset on the UI display. Wait until dash is displayed which means end of the number.	00/0- to 99/9-
25	N/A	N/A (This step is bypassed automatically)	N/A
26	Main Control Software Version	Displays in three sequential flashes the Main Control software version on the UI display. Note: This is repeated displayed during all time in this step.	00/00/00 to 99/99/99
27	Dispenser UI Control Software Version	Displays in three sequential flashes the Dispenser UI Control software version on the UI display. Note: This is repeated displayed during all time in this step.	00/00/00 to 99/99/99
28-37	N/A	N/A (This step bypassed automatically)	N/A
38	Forced Defrost mode	Set the Forced Defrost Mode by selecting on the "CHANGE SETTING KEY". The Forced Defrost command shall be sent at the exit of Service Mode. No Forced Defrost = Defrost does not resume after exit from SVC; Short Defrost = minimum TTD; Long Defrost = maximum TTD; Note: "No Forced Defrost" is the default	OF = No Forced Defrost Sh = Short Defrost Lo = Long Defrost
39-41	N/A	N/A (This step bypassed automatically)	N/A
42	UI EEPROM Map Version	Reads the EEPROM Map Version.	XX XX XX
43	UI FLASH Map Version	Reads the FLASH Map Version.	XX XX XX
44	Sankyo Icemaker Harvesting Test	At entry of this step turn OFF a harvesting cycle. Use the "CHANGE SETTING KEY" to start the harvest cycle. Note :- Make the bucket to not full state to initiate the harvesting. The system should not come out of this step unless harvest cycle is completed.	Digit 1: 1 = Ice maker harvesting cycle is ON 2 = Ice maker harvesting cycle is OFF Digit 2: 1 = Ice bucket full detected 2 = Ice bucket not full 3 = Switch faulty or motor (Time out = 20 seconds) Blank = Until get a valid reading.
45	Sankyo and LPIM Icemaker Water Fill Test	Upon entry to this step there will be a 3 second delay, and then the ice tray will be moved to home position. After the tray has reached home position, the "CHANGE SETTING KEY" can be used to start or to toggle between "ON" and "PAUSE" an ice maker fill. Note:- Water filling time is based on the flash map setting. At step entry the water fill cycle default to OFF. Note:-The "CHANGE SETTING KEY" will be ignored if the DISPLAY = 01. NOTE: For LPIM, ignore homing of the motor. NOTE: Prior entry of this step run step 44 to make sure the ice tray is empty before proceeding with water fill, otherwise double fill will occur. NOTE: Make sure to proceed with step 44 after water fill test to leave tray empty when finishing service.	01 = Ice tray moving to home position 02 = Water fill OFF 03 = Water fill ON 04 = Water fill Paused
46	N/A	N/A	N/A
47	Sankyo Icemaker Ice Tray Thermistor	Read the current temperature of the Ice maker tray thermistor and compare this value. This information shall be Dynamically updated every second. Value Read (VR): - Ice maker temp start threshold < VR≤ HOT_UPPER_LIMIT ⟹ Valid warmer - COLD_LOWER_LIMIT < VR≤ Ice maker temp start threshold ⟹ Valid cooler. - VR > HOT_UPPER_LIMIT ⟹ Short - VR < COLD_LOWER_LIMIT ⟹ Open Note : Harvest temp range defined in the flash map	Blank = Until get a valid reading, 01 = Valid temp warmer than harvest temp 11 = Valid temp cooler than harvest temp 02 = Open 03 = Short
48	Icemaker - Ice Bucket Detection Switch	Read the ice bucket detection switch status . Note:- In case of Sankyo IM with no switch present, the display will always show "2" (Ice Bucket present even if the bucket is removed/absent)	01 = Ice bucket absent 02 = ice bucket present

NOTES:

1. IM SOLENOID GROUNDED THROUGH MOUNTING.
2. EVAP COVER GROUNDED HEAT SHIELD.
3. POLARITY ON THE DISPENSER IS ACCOMPLISHED USING A RELAY ON THE MAIN BOARD. THE BU AND THE GY/OR WIRES SWITCH POLARITY DEPENDING ON THE CRUSH/CUBE POSITION. SEE TABLE BELOW:

	GY/OR	BU
CRUSH	-	+
CUBE	+	-

WIRING DIAGRAM

WARNING

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WIRE COLOR CODE

WH/GN = WHITE/GREEN TRACER
OR/BK = ORANGE/BLACK TRACER
YL/RD = YELLOW/RED TRACER
BU/BK = BLUE/BLACK TRACER
WH/BU = WHITE/BLUE TRACER
BK/YL = BLACK/YELLOW TRACER
WH/RD = WHITE/RED TRACER
GN/YL = GREEN/YELLOW TRACER
BK/WH = BLACK/WHITE TRACER
YL/BK = YELLOW/BLACK TRACER
PK/BK = PINK/BLACK TRACER
BR/WH = BROWN/WHITE TRACER
OR/BU = ORANGE/BLUE TRACER
RD/WH = RED/WHITE TRACER
LB/BK = LIGHT BLUE/BLACK TRACER

WIRE COLOR CODE

TN/WH = TAN/WHITE TRACER
TN/BK = TAN/BLACK TRACER
RD/YL = RED/YELLOW TRACER
V/WH = VIOLET/WHITE TRACER
BL/YL = BLUE/YELLOW TRACER
YL/BU = YELLOW/BLUE TRACER

WIRE COLOR CODE

BU = BLUE
BK = BLACK
RD = RED
WH = WHITE
YL = YELLOW
OR = ORANGE
BR = BROWN
GY = GRAY
PK = PINK
V = VIOLET
TN = TAN

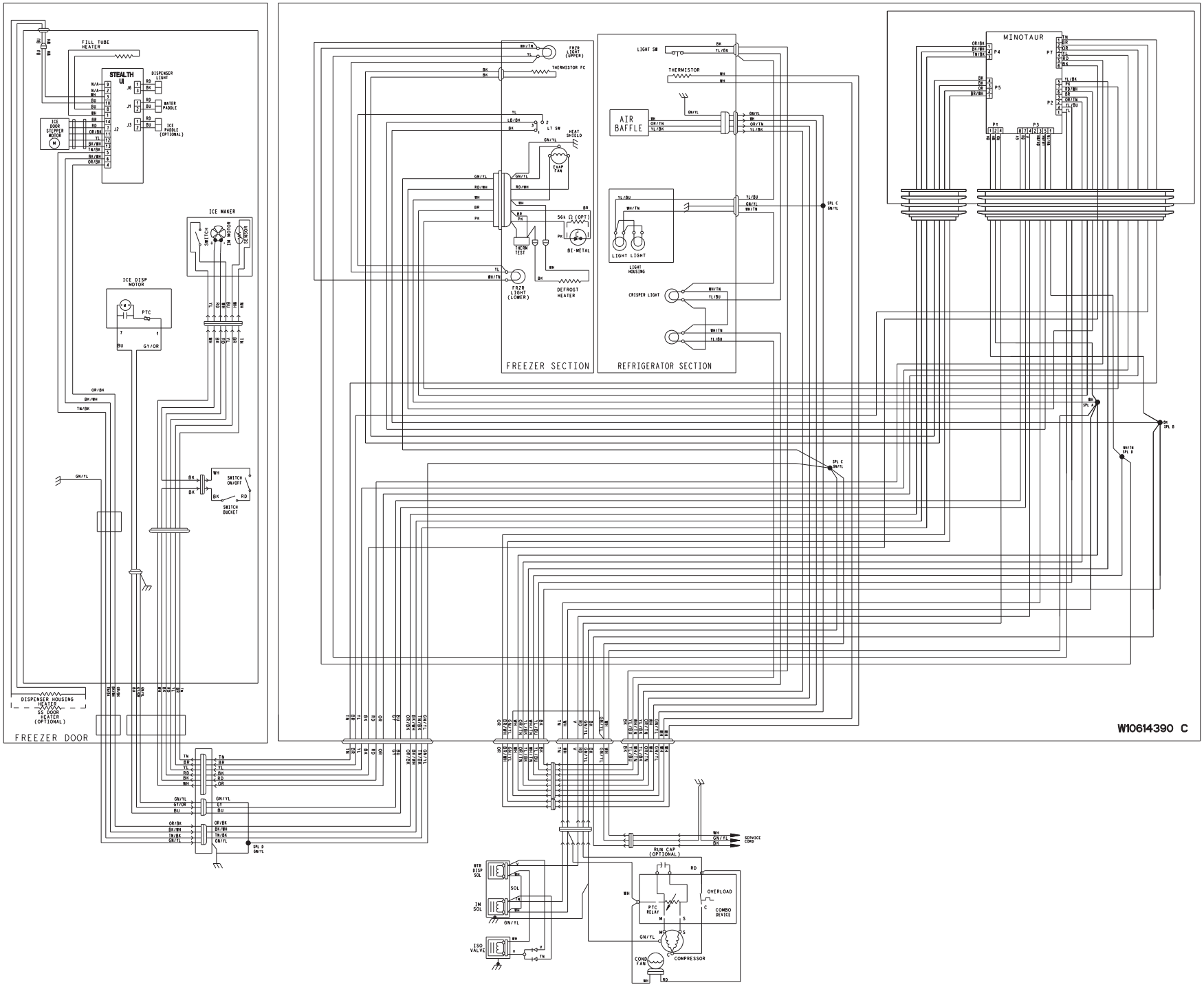
MANUFACTURED UNDER ONE OR MORE OF THE FOLLOWING UNITED STATES PATENTS

3,960,631 4,659,157 4,765,696 4,908,544 5,011,101
4,084,725 4,665,708 4,767,896 4,911,508 5,033,182
4,090,641 4,694,553 4,768,353 4,914,928 5,033,273
4,102,660 4,706,169 4,776,178 4,920,758 5,042,398
4,327,557 4,707,401 4,787,216 4,924,680 5,044,704
4,330,310 4,709,556 4,799,362 4,934,541 5,050,777
4,640,432 4,715,512 4,800,935 4,936,641 5,070,708
4,649,712 4,728,759 4,801,181 4,944,566 5,077,985
4,649,717 4,745,656 4,833,894 4,958,890 D309,461
4,649,718 4,745,775 4,862,577 4,996,848

OTHER PATENTS PENDING

SYMBOL CODE

: CONNECTOR - SCREW ON
: CONNECTOR - CLOSED END
: DISCONNECT TERMINAL
: PERMANENT CONNECTION
: PLUG CONNECTOR
: GROUND (CHASSIS)



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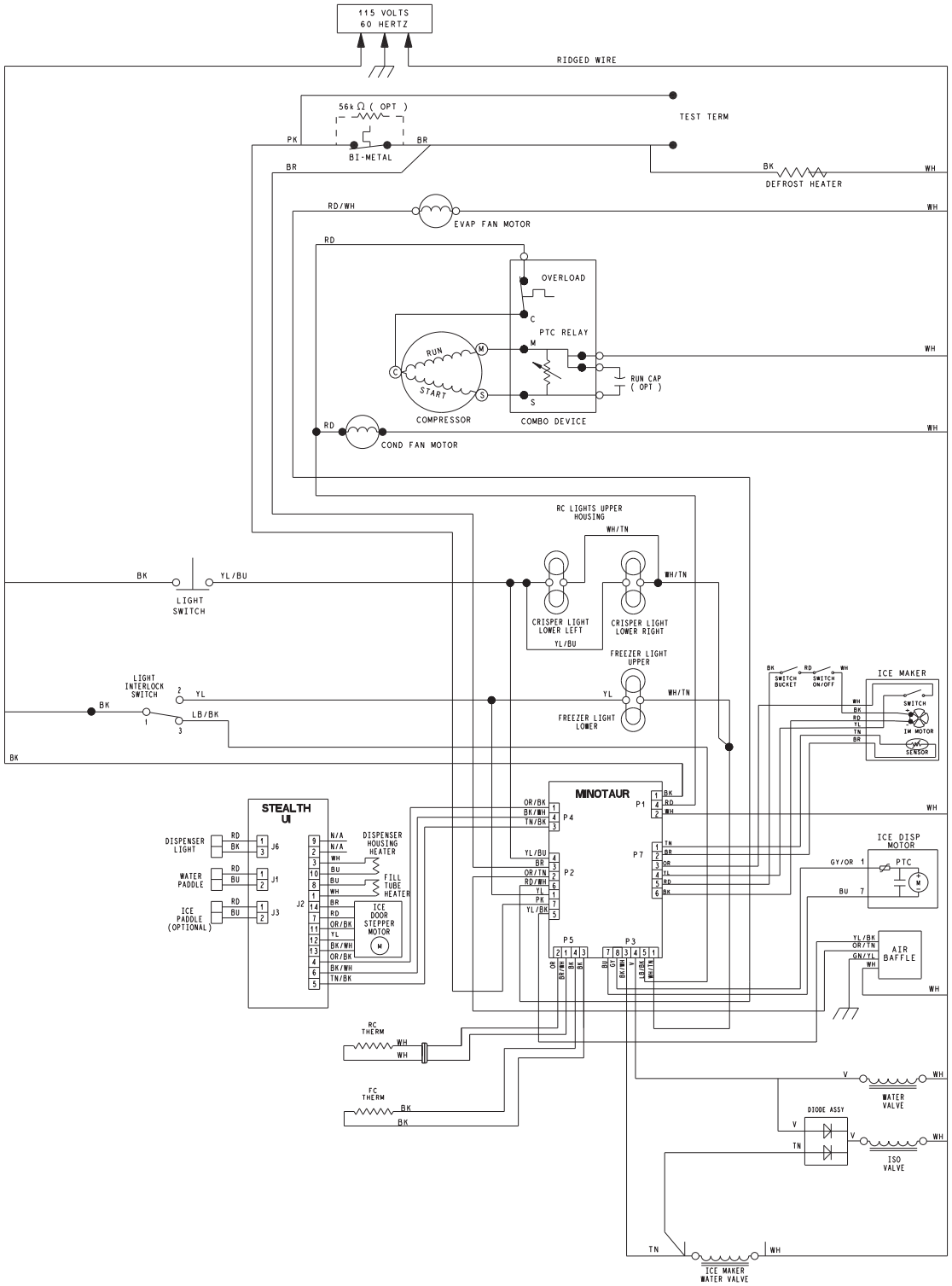

VOLTAGE TEST POINTS MINOTAUR						
		FROM	COLOR	TO	COLOR	
MAIN CONTROL	P1	P1-1	BK	P1-2	WH	120 VAC INPUT - CONSTANT WHEN UNIT PLUGGED IN
		P1-2	WH	P1-4	RD	120 VAC OUTOUT TO COMPRESOR /CONDENSER FAN WHEN COOLING
	P2	P2-1	YL	P1-1	BK	120 VAC INPUT FC LIGHT SWITCH FEEDBACK
		P2-2	OR/TN	P1-2	WH	120 VAC INPUT AIR DOOR FEEDBACK
		P2-3	BR	P1-2	WH	120 VAC INPUT BIMETAL FEEDBACK
		P2-4	YL/BU	P1-1	BK	120 VAC INPUT RC LIGHT SWITCH FEEDBACK
		P2-5	YL/BK	P1-2	WH	120 VAC OUTPUT TO AIR DOOR
		P2-6	RD/WH	P1-2	WH	120 VAC OUTPUT TO EVAP FAN WHEN COOLING
		P2-7	PK	P1-2	WH	120 VAC OUTPUT TO DEFROST HEATER WHEN ENERGIZED
	P3	P3-1	WH/TN	P1-1	BK	120 VAC OUTPUT TO FC LIGHT AND RC LIGHTS
		P3-3	BK/WH	P1-1	BK	120 VAC INPUT ICE MAKER WATER VALVE
		P3-4	V	P1-1	WH	120 VAC OUTPUT TO WATER DISPENSER VALVE IS ACTIVE
		P3-5	LB/BK	P1-2	BK	120 VAC INPUT DOOR SWITCH
		P3-7	BU	P3-8	GY	140 VDC OUTPUT TO IDI MOTOR/NON IDI MOTOR IS ACTIVE
	P4	P4-1	OR/BK	P4-4	BK/WH	14 VDC OUTPUT USER INTERFACE
		P4-3				COMMUNICATION
	P5	P5-1	BR/WH	P5-2	OR	5 VDC INPUT RC THERMISTOR
		P5-3	BK	P5-4	BK	5 VDC INPUT FC THERMISTOR
	P7	P7-1	TN	P7-2	BR	5 VDC INPUT THERMISTOR SANKYO ICE MAKER
		P7-3	OR	P7-4	YL	14 VDC OUTPUT TO SANKYO ICE MAKER SWITCH
		P7-5	RD	P7-6	BK	14 VDC OUTPUT TO SANKYO ICE MAKER MOTOR

VOLTAGE TEST POINTS STEALTH					
J1	J1-1	RD	J1-2	BU	PWM SIGNAL ☐ 9.3 V (IS 1/3 DUTY CYCLE OF 14 V- OPEN) / 0 V - THE ICE DISPENSER IS ACTIVE
J2	J2-1	WH	J2-8	BU	14 VDC OUTPUT TO FILL TUBE HEATER
	J2-3	BU	J2-10	WH	14 VDC OUTPUT TO DISPENSER HOUSING HEATER
	J2-4	OR/BK	J2-6	BK/WH	14 VDC INPUT GEMINI FLASH
	J2-5	TN/BK			COMMUNICATION (NOT TESTED)
J3	J3-1	RD	J3-2	BU	PWM SIGNAL ☐ 9.3 V (IS 1/3 DUTY CYCLE OF 14 V- OPEN) / 0 V - THE ICE DISPENSER IS ACTIVE
J6	J6-1	RD	J6-3	BK	14 VDC OUTPUT DISPENSER LIGHT

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